Impact of the First Year of Nocturnal Hemodialysis on Biochemical Nutritional Parameters

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INTRODUCTION

Thrice weekly nocturnal hemodialysis (NHD) is a growing modality option which has been hypothesized to improve outcomes over time. In-center NHD allows for a longer, overnight dialysis session compared to conventional in-center hemodialysis (ICHD) while remaining under the care of the clinic nephrology team. We determined demographics and trended key nutritional biochemical markers in dialysis in the first 12 months after transition to NHD.

METHODOLOGY

- In a single-arm, observational study, we assessed patients (n=551) starting NHD between 01/01/2006 and 07/31/2010 who had ≥8 nocturnal treatments/month for ≥12 contiguous months.
- Mean and standard deviation for lab values were calculated for months 0, 3, 6, 9, 12 for the first 12 months.
- Month zero is defined as the 30 days prior to start month date of 1st nocturnal dialysis month.

RESULTS

Table 1. Patient Demographics

Mean ± SD	NHD	ICHD
N	521	191,336
Age (yr)	50.4±12.8	61.1±15.3
% Male	70.2%	56.0%
Race and Ethnicity		
% African American	42.1%	35.2%
% Hispanic	11.6%	15.0%
% Asian, Pacific Islander	3.1%	3.6%
% Native American	1.3%	1.3%
% Unknown	0.0%	0.2%
% Diabetic	37.4%	45.8%
Vintage (yr)	3.8±3.8	2.0±3.1
BMI	31.8±9.4	27.4±7.2

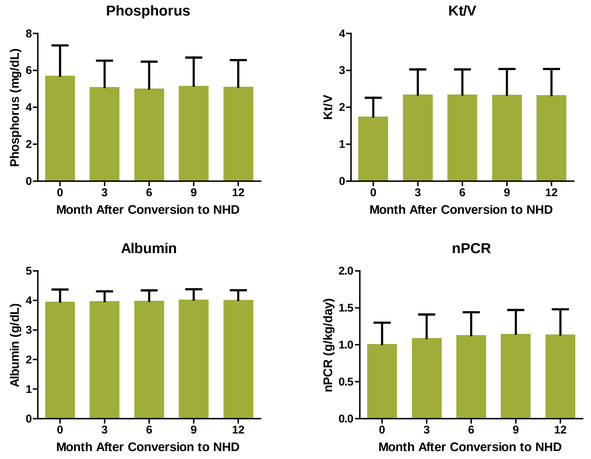

Figure 1. Laboratory and Dialysis Trends during the First Year of NHD

Table 2. Laboratory and Dialysis Values during the First Year of NHD

Month	Albumin (g/dL)	Phosphorus (mg/dL)	Kt/V	nPCR (g/kg/day)
0	3.96 ± 0.41	5.71 ± 1.64	1.75 ± 0.51	1.01 ± 0.29
3	3.98 ± 0.33	5.09 ± 1.44	2.35 ± 0.68	1.09 ± 0.32
6	3.99 ± 0.35	5.02 ± 1.45	2.35 ± 0.68	1.13 ± 0.31
9	4.03 ± 0.35	5.17 ± 1.53	2.34 ± 0.70	1.15 ± 0.32
12	4.02 ± 0.33	5.12 ± 1.44	2.33 ± 0.71	1.14 ± 0.34
p-value for trend	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*

SUMMARY of RESULTS

- Compared to the general ICHD population, the NHD population is younger and comprised of more men, more African Americans, and fewer diabetics (Table 1).
- Trends over the first 12 months on NHD show an initial decrease in serum phosphorus when Kt/V increases (Figure 1 and Table 2).

KEY LEARNINGS

- ✓ The NHD population differs from the traditional in-center population.
- ✓ Trends of biochemical results over time suggest that the first year on NHD results in improved nPCR and albumin while at the same time increasing phosphorus removal, suggesting that nocturnal dialysis allows for greater protein intake or improved appetite.
- ✓ The impact of these biochemical markers on outcomes (morbidity & mortality) is yet to be determined.

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